Mining

Historically, mining occurred on the Kenai National Wildlife Refuge. Some of these old mining sites may present contaminant issues for the refuge.

Mining has occurred on the Kenai Peninsula for several hundreds of years, initially by Native peoples, later by the Russians in the 1800s and then by thousands of miners during the gold rush era. This section will address mining claims on the refuge, historic mining sites and contamination associated with these sites.

Acquiring mining information for the refuge has proven to be a time-consuming and complex process. Several steps were involved to track down the most complete mining information available. This process was summarized by Parson (2000) in a flowchart entitled, Mining Information for Alaska (Appendix J). This chart describes the process used to acquire mining information for the KNWR.

Mining historically has occurred on the KNWR. There were 23 active claims on the refuge as of 1976; however, none of these claims remain active. Additionally, there were at least 32 historical claims on the refuge, which were primarily gold placer claims. It is important to note that just because a *claim* existed, it does not mean an actual *mine* necessarily existed (or that mining activities ever occurred).

Overall, most historical mining ventures on the refuge appeared to be small-scale and likely pose minimal contamination issues. However, some operations, even though small-scale, may have resulted in some degree of contamination from fuels, etc. One concern with gold mining is mercury contamination. Historically, mercury was widely utilized as an amalgam to separate gold particles from river sediment.

In August 1987, 55-gallon barrels were airlifted from the Surprise Creek in Kenai Wilderness. USFWS Photo by Richard K. Johnston.

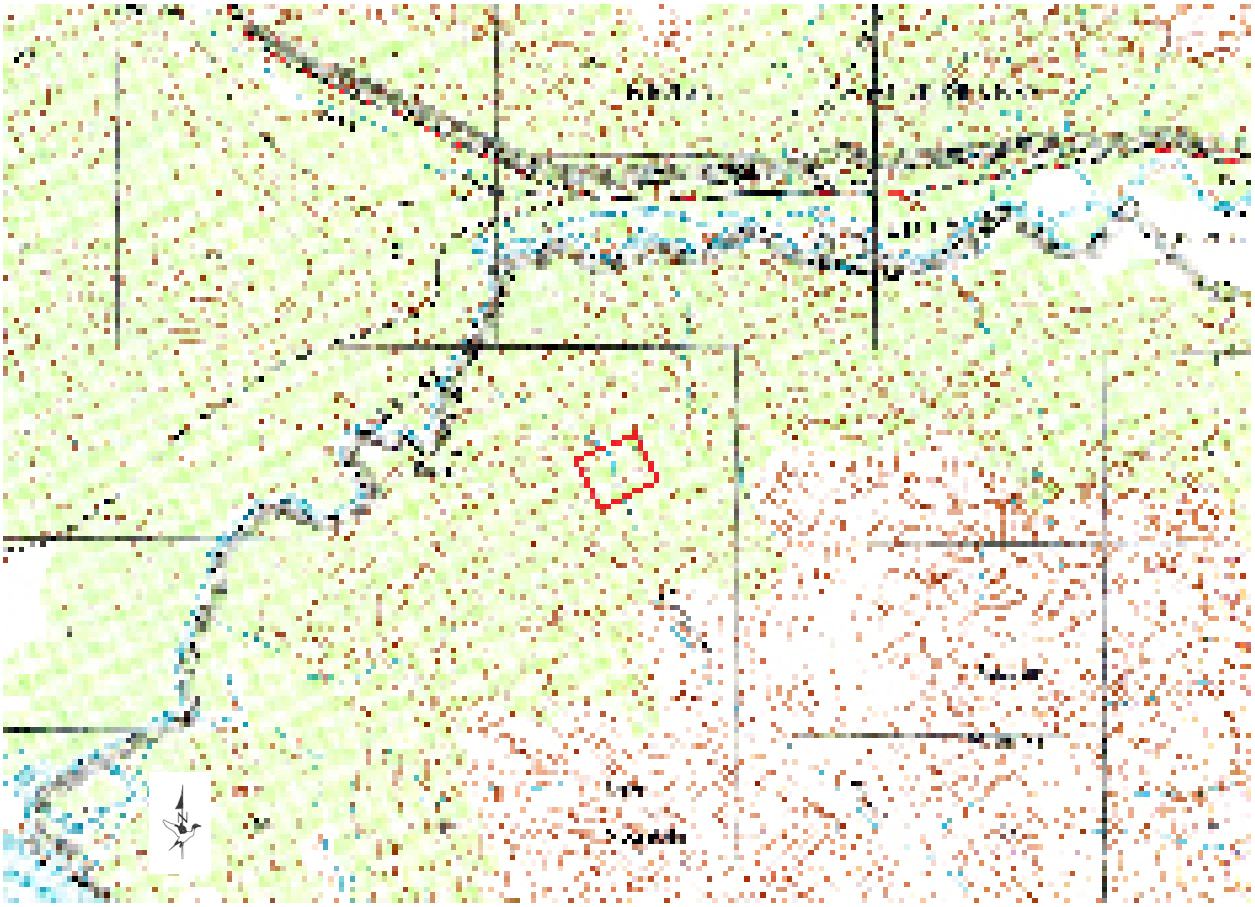
Surprise Creek Gold Mining Site

One known gold mining area with potential contamination issues is located in the Surprise Creek area of the Kenai Wilderness (approximate area denoted by the box, Figure 9). Several cabins associated with mining activity are located in this area.

A drum removal occurred at this site on August 3, 1987. Two dozen 55-gallon barrels were removed by helicopter; at least half of the barrels were full of oil and several were leaking. Due to logistics, all of the barrels were not removed in 1987, and a recreationist's complaint to the ADEC prompted another removal effort on May 12, 1994. During this effort, four drums of diesel fuel and several empty drums were removed from the site. The drums and other mining items had been there since the 1960s.

A more recent reconnaissance of this gold mining area occurred on October 22, 2000 by Gary Titus, a KNWR Backcountry Ranger. Some of the items he discovered at the site included the following: welder/generator; model-T compressor; tank (air compressor) measuring two-foot in diameter by six foot five inches in length with a manufacture tag located on the side saying "Montag stove and

Figure 9. Approximate Location of Surprise Creek Gold Mining Area.



U.S. Geological Survey. Kenai (B-1) Quadrangle, Alaska-Kenai Peninsula Borough, 1:63 360 Series (Topographic).

furnace work Portland Oregon working pressure 128 lbs;" a tank (air compressor) measuring one-foot eight-inches in diameter by four-foot two-inches in length with the words "Deluge Chemical" written on the side; three 55-gallon drums (two empty and one with a few gallons of fuel) with "Alaska Diesel" printed on the end of the drums; two full 10-gallon drums labeled "carbide;" stacks of lumber; riveted mining pipe and other mining equipment; and a water wheel. Most of these items were located within 25 feet of Surprise Creek. Titus also noted that a mining shaft is located in the area, which could potentially pose a physical safety hazard.

Some contaminants of concern at this site include mercury, cyanide, PCBs and calcium carbide. Additionally, explosives are a potential concern at this site. PCBs could be present in Alaska Diesel because additives, such as PCBs, were often added to Alaska Diesel. Calcium carbide was used in headlamps and other portable lighting systems. When calcium carbide is exposed to moisture, acetylene gas is produced. According to the material safety data sheet (MSDS) for calcium carbide, acetylene is rapidly produced from carbide and water and is considered hazardous because of its flammable and explosive properties (http://svis.org/caving/wvusg/calcium.htm).

Fifty-five gallon barrels at the Surprise Creek gold mining area prior to removal efforts in 1987. USFWS Photo by Richard K. Johnston.

A contaminants investigation has never occurred at this site. Due to the history of this site, the potentially hazardous substances identified at the site, and the prior removal efforts, a contaminants investigation may be warranted.

Indian Creek Mining Area

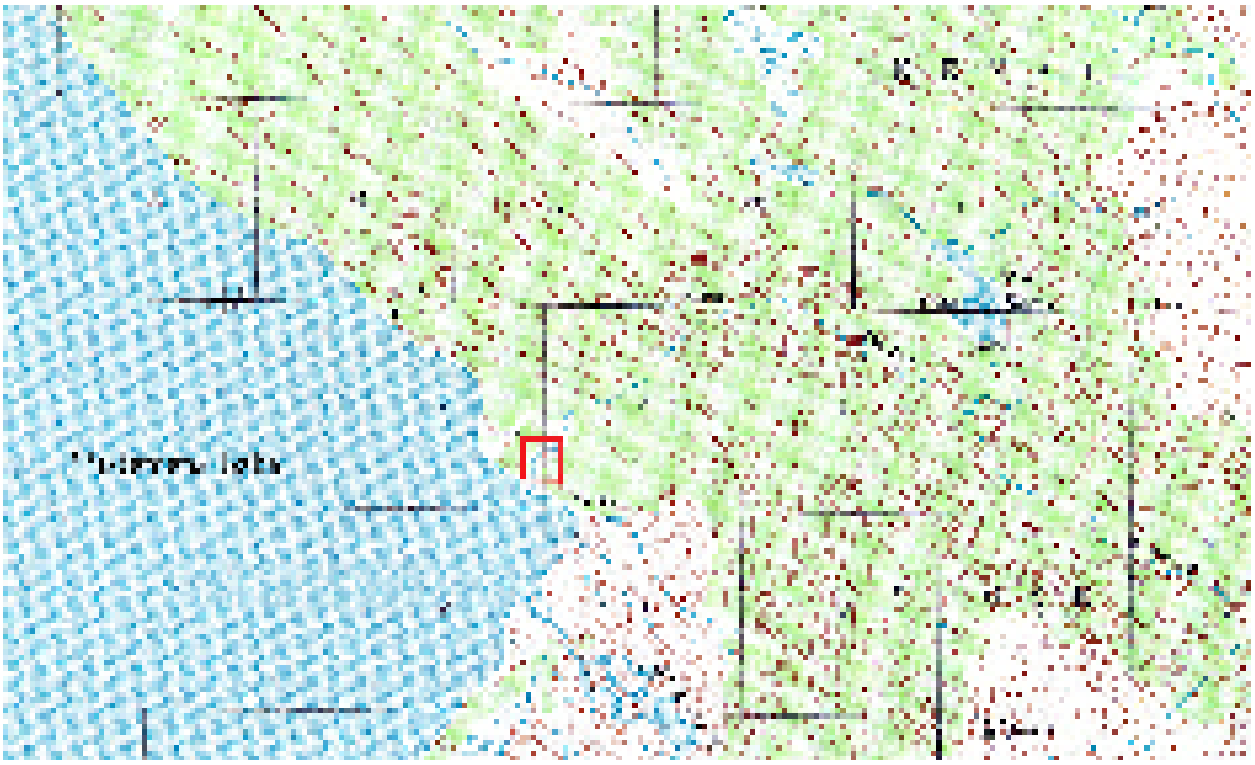
Historically several people mined gold in the area where Indian Creek enters Tustemena Lake (approximate area denoted by the box, Figure 10). At this time, little information is available about possible contaminant concerns resulting from this mining activity.

Other Mining Locations

Debbie Corbett, a USFWS archaeologist, has documented numerous prehistoric and historic sites on KNWR. Some of these sites include mining locations, homesteading sites and old cabins. The locations of these sites on the KNWR have been mapped using ArcView®. Also, Corbett and Maggi Arend, a USFWS Natural Resource Planner, have written a document entitled, *Kenai National Wildlife Refuge, Cultural Resource Guide* (December 1996). Most of these historic sites likely do not present contamination issues for the refuge, but they may provide location information for mining and other activities that have occurred on the refuge. In fact, many of these sites may qualify for protection under federal laws as archeological resources. For further information about these sites, please contact Debbie Corbett at (907) 786-3399.

Although it does not appear that large-scale mining operations occurred on the refuge, mines bordering the refuge boundaries may pose potential contamination issues. Historically, there were thousands of miners in the Hope, Sunrise, Resurrection Creek and Cooper Landing areas (Corbett and Arend, 1996). These areas, situated on National Forest Service (NFS) lands, are located near the northeastern portion of the refuge boundary. Contamination from

Figure 10. Approximate Location of Indian Creek Gold Mining Area.



U.S. Geological Survey. Kenai (A-2) Quadrangle, Alaska, 1:63 360 Series (Topographic).

historic or current mining operations on these lands may enter the refuge's watersheds. According to Carol Huber, a Forest Geologist for the NFS, there has been extensive gold mining and mercury use on Resurrection Creek. Resurrection Creek, although near the refuge boundary, does not flow into the refuge. One area Huber suggested that may pose potential contamination issues for the refuge is Cooper Creek, which flows into the Kenai River approximately 3 miles upstream from the refuge boundary. According to Huber, gold mining and mercury use were extensive in this area from the late 1890s to around 1917.

Summary: Mining

At present, the Surprise Creek gold mining area appears to be the only known mining site on the refuge with potential contamination issues. Other areas which may justify further investigation include the Indian Creek mining area and Cooper Creek.